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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,545	10/12/2001	Casimer M. DeCusatis	FIS920010130USI(14563)	1482

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Steven Fischman, Esq.
Scully, Scott, Murphy & Presser
400 Garden City Plaza
Garden City, NY 11530

EXAMINER

HASSANZADEH, PARVIZ

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/976,545	Applicant(s) DECUSATIS ET AL.	
	Examiner Parviz Hassanzadeh	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-17 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/12/01</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election of Group II, apparatus claims 11-17, in the reply filed on 6/22/04 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1-10 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group I, method claims, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 6/22/04.

Drawings

The drawings are objected to because in Figures 1 and 3, torch 34 should be 36 and torch control 36 should be 40 in accord with specification. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant

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will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description: system 10 as recited on page 6, line 27. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 11 is objected to because of the following informalities: on line 2, it is suggested to change "method" to "system". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 11, 12, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimbergen et al (US Patent No. 6,712,927 B1) in view of Shimizu et al (JP 10-336,154-A).

Grimbergen et al teach a plasma processing system (Fig. 1) comprising:

process gas source 70 and plasma RF power supply 104 for generating plasma and treat the surface of a substrate 50 in a process chamber 35 (means for depositing a material on an optical substrate to form a film thereon);

computer controller 155 for changing process condition in the process chamber according to programmed guidelines in relation to a detected signal (a control subsystem for controlling a set of manufacturing parameters as the film is being formed on the substrate to make the optical device);

light source 150 such as a laser providing an incident light on the surface of the substrate and light detector 160 for detecting reflected light from the surface of the substrate, wherein light source and the light detector are in communication with the computer controller 155 (a light subsystem for generating an optical signal having a given wavelength and for applying the optical signal to the film being formed on the substrate) (column 5, line 58, through column 6, line 25, column 11, line 40 through column 12, line 42).

Grimbergen et al fail to teach a dither source for dithering the wavelength of the light source and a feedback circuit for generating a correlation signal representing the difference between the given wavelength and the defined wavelength, and for using the correlation signal to adjust at least one of the manufacturing parameters to make the optical device with said given property at the defined wavelength.

Shimizu et al teach an optical light source system (Fig. 17) including a dither signal generator circuit 11 the outputs a dither signal, a phase comparator 12 that performs synchronous detection of an output of a photo-detector and the dither signal, and a phase shifter control circuit 9 which controls a phase shift amount of the phase shifter in order to maximize the output of the photo-detector (abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the optical light source system as taught by Shimizu et al in the apparatus of Grimbergen et al as an art recognized equivalent light source in order to maximize the detected output signal.

Further regarding intended use of the apparatus: It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); “Apparatus claims cover what a device is, not what a device does” (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the

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claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see MPEP 2114.

Thus, the apparatus as discussed above can be used for an etching or a deposition process.

Further regarding substrate being an optical substrate: Inclusion of material or article worked upon by a structure does not impart patentability to the claims. *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

Further regarding claims 12: the monitoring system of the apparatus of Grimbergen including the computer controller 155 provides a real time control of the treatment process.

Further regarding claims 16: the light source 150 direct the light to the surface of the substrate and the light detector detects the reflected light from the surface of the substrate.

Further regarding claims 17: the computer controller 155 controls any required changes in the process conditions in the process chamber according to programmed guidelines in relation to the measured reflected signal.

Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimbergen et al (US Patent No. 6,712,927 B1) in view of Shimizu et al (JP 10-336,154-A) as applied to claims 11, 12, 16 and 17, and further in view of Holland (US Patent No. 4,311,725).

Grimbergen et al in view of Shimizu et al teach all limitations of the claims as discussed above except for the light passing through the film and the transmitted light through the film is detected.

Holland teach a coating apparatus (Figs. 5, 6) including a real-time thickness monitoring system wherein the coating process is controlled based on light reflected from the coating film or

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the light transmitted through the coating film (column 4, line 40 through column 5, line 2, and column 7, line 43 through column 9, line 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the light transmittance monitoring technique as taught by Holland in the apparatus of Grimbergen et al in view of Shimizu et al in order to measure the light transmitted through the film as an art recognized equivalent of monitoring thickness of the coating film.

Claims 11, 12, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aspnes et al (US Patent No. 4,332,833) in view of Shimizu et al (JP 10-336,154-A).

Aspnes et al teach a plasma processing system (Fig. 1) comprising:

chemical vapor deposition processing chamber 10 for depositing a layer on the surface of a substrate 11 (means for depositing a material on an optical substrate to form a film thereon);

controller 13 for controlling the process condition in the process chamber according to signal received from comparator 22 (a control subsystem for controlling a set of manufacturing parameters as the film is being formed on the substrate to make the optical device);

light source 14 providing an incident light on the surface of the substrate and light detector 17 for detecting reflected light from the surface of the substrate (a light subsystem for generating an optical signal having a given wavelength and for applying the optical signal to the film being formed on the substrate) (column 6, lines 14 through column 7, line 6).

Aspnes et al fail to teach a dither source for dithering the wavelength of the light source and a feedback circuit for generating a correlation signal representing the difference between the given wavelength and the defined wavelength, and for using the correlation signal to adjust at

least one of the manufacturing parameters to make the optical device with said given property at the defined wavelength.

Shimizu et al teach an optical light source system (Fig. 17) including a dither signal generator circuit 11 the outputs a dither signal, a phase comparator 12 that performs synchronous detection of an output of a photo-detector and the dither signal, and a phase shifter control circuit 9 which controls a phase shift amount of the phase shifter in order to maximize the output of the photo-detector (abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the optical light source system as taught by Shimizu et al in the apparatus of Aspnes et al as an art recognized equivalent light source in order to maximize the detected output signal.

Further regarding substrate being an optical substrate: Inclusion of material or article worked upon by a structure does not impart patentability to the claims. *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

Further regarding claims 12: the monitoring system of the apparatus of Aspnes et al including the controller 13 provides a real time control of the deposition process.

Further regarding claims 16: the light source 14 direct the light to the surface of the substrate and the light detector 17 detects the reflected light from the surface of the substrate.

Further regarding claims 17: the controller 13 controls any required changes in the process conditions such as deposition rate in relation to the measured reflected signal (column 6, lines 14 through column 7, line 6).

Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aspnes et al (US Patent No. 6,712,927 B1) in view of Shimizu et al (JP 10-336,154-A) as applied to claims 11, 12, 16 and 17, and further in view of Holland (US Patent No. 4,311,725).

Aspnes et al in view of Shimizu et al teach all limitations of the claims as discussed above except for the light passing through the film and the transmitted light through the film is detected.

Holland teach a coating apparatus (Figs. 5, 6) including a real-time thickness monitoring system wherein the coating process is controlled based on light reflected from the coating film or the light transmitted through the coating film (column 4, line 40 through column 5, line 2, and column 7, line 43 through column 9, line 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the light transmittance monitoring technique as taught by Holland in the apparatus of Aspnes et al in view of Shimizu et al in order to measure the light transmitted through the film as an art recognized equivalent of monitoring thickness of the coating film.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

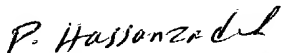
Coronel et al (US Patent No. 5,658,418) teach an optical monitoring system for monitoring thickness of forming film in a plasma enhanced chemical vapor deposition apparatus;

Kinsel (US Patent No. 3,713,042) and Goodwin (US Patent No. 5,737,109) teach laser systems including mechanism for stabilizing or locking laser frequency.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parviz Hassanzadeh whose telephone number is (571)272-1435. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571)272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Parviz Hassanzadeh
Primary Examiner
Art Unit 1763

August 3, 2004